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19/04/2017

MEB5

CHEM 102

1) Discuss the two major classification of Alcohols. Give two examples each for each class.

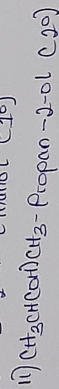
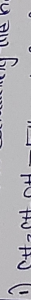
→ It is based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

It will be primary alcohol (C_1), if the no. of hydrogen atoms attached to the carbon containing the hydroxyl group is two or three. Secondary alcohol (C_2), if one hydrogen atom. Tertiary alcohol (C_3), if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group.

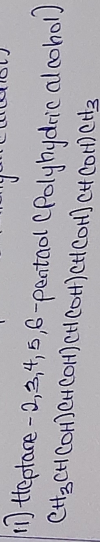
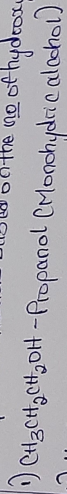
→ Based on the no. of hydroxyl groups they possess.

Monohydric alcohols have one hydroxyl group present in the alcohol structure. Polyhydric alcohols, also called glycols have two hydroxyl groups present in the alcohol structure. Trihydric alcohols or triols, have three hydroxyl groups present in the alcohol structure. Polyhydric alcohols or polyols have more than three hydroxyl groups.

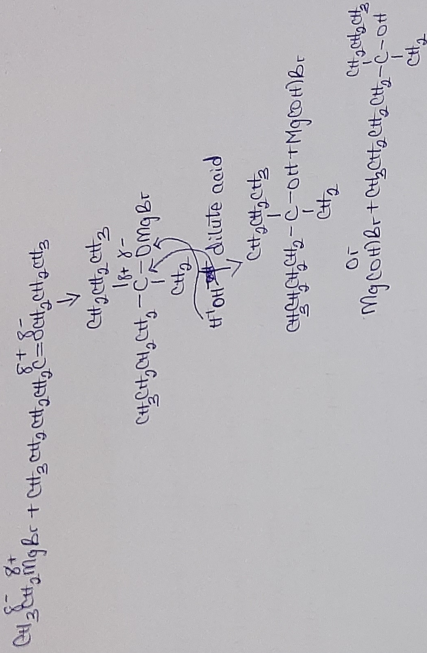
b) Examples of Alcohols based on the no. of hydrogen atoms attached to the carbon atom containing the hydroxyl group are:



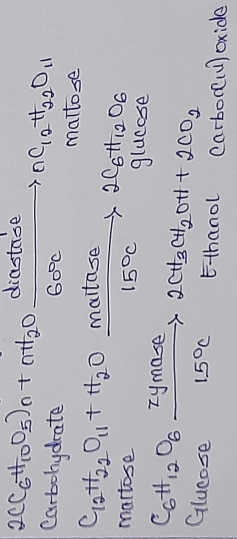
Examples of Alcohols based on the no. of hydroxyl groups possessed are



2) In the Fiebigel synthesis of Alkynes, react a named Reagent reactant with $C_2H_5CH_2CH_2C \equiv OCH_2CH_2CH_3$. Show the reaction steps.

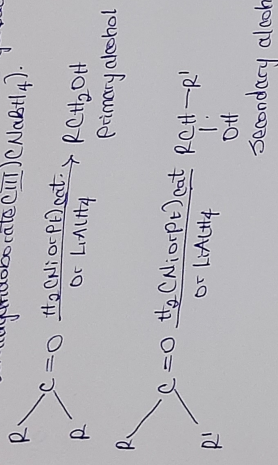


3) Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.



4. Determine the product obtained in the reduction of Alkanone or Alkanal. Use a specific example for each and show the equation of reaction.

5. In the reduction of Alkanones and Alkanal to primary and secondary alcohols respectively, by the reaction with hydrogen in the presence of a nickel or platinum catalyst or with aluminium isopropoxide or with complex metal hydride, such as lithium tetrahydridoaluminate (III) $(LiAlH_4)$ or sodium tetrahydridoaluminate (III) $(NaBH_4)$.



Examples are:

